

CHAPTER 18

Writing Recommendation Reports

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Understanding the Role of Recommendation Reports

A recommendation report can be the final link in a chain of documents that begins with a proposal and continues with one or more progress reports. This last, formal report is often called a *final report*, a *project report*, a *recommendation report*, a *completion report*, or simply a *report*. The sample report shown in [Figure 18.8](#) (pp. 490–513) is the recommendation report in the series about tablet computers at Rawlings Regional Medical Center presented in [Figure 16.6](#) (pp. 439–45) in [Chapter 16](#) and [Figure 17.4](#) (pp. 457–64) in [Chapter 17](#).

For more about proposals and progress reports, see [Ch. 16](#) and [Ch. 17, p. 454](#).

A recommendation report can also be a freestanding document, one that was not preceded by a proposal or by progress reports. For instance, you might be asked for a recommendation on whether your company should offer employees comp time (compensating those who work overtime with time off) instead of overtime pay. This task would call for you to research the subject and write a single recommendation report.

Most recommendation reports discuss questions of feasibility. *Feasibility* is a measure of the practicality of a course of action. For instance, a company might conduct a *feasibility study* of whether it should acquire a competing company. In this case, the two courses of action are to acquire the competing company or not to acquire it. Or a company might do a study to determine which make and model of truck to buy for its fleet.

A feasibility report is a report that answers three kinds of questions:

- **Questions of possibility.** We would like to build a new rail line to link our warehouse and our retail outlet, but if we cannot raise the money, the project is not possible. Even if we can find the money, do we have government authorization? If we do, are the soil conditions appropriate for the rail link?
- **Questions of economic wisdom.** Even if we can afford to build the rail link, should we do so? If we use all our resources on this project, what other projects will have to be postponed or canceled? Is there a less expensive or a less financially risky way to achieve the same goals?
- **Questions of perception.** Because our company's workers have recently accepted a temporary wage freeze, they might view the rail link as an inappropriate use of funds. The truckers' union might see it as a threat to truckers' job security. Some members of the public might also be interested parties, because any large-scale construction might affect the environment.

Using a Problem-Solving Model for Preparing Recommendation Reports

The writing process for a recommendation report is similar to that for any other technical document. The Focus on Process box on [page 473](#) outlines this process.

FOCUS ON PROCESS: Recommendation Reports

In writing recommendation reports, pay special attention to these steps in the writing process.

PLANNING

Analyze your audience, determine your purpose, and visualize the deliverable: the report you will submit. Conduct appropriate secondary and primary research. See [Chapter 5](#) for more about analyzing your audience and purpose; see [Chapter 6](#) for more on research.

DRAFTING

Write a draft of the report. Large projects often call for many writers and therefore benefit from shared document spaces. Review the writing advice in [Chapter 3](#) and the collaboration advice in [Chapter 4](#); see [Chapter 8](#) for tips on writing persuasively.

REVISING

Think again about your audience and purpose, and then make appropriate changes to your draft. See the Writer's Checklist at the end of this chapter.

EDITING

Improve the writing in the report, starting with the largest issues of development and emphasis and working down to the sections, paragraphs, sentences, and individual words. See [Chapter 9](#) for help with emphasis and [Chapter 10](#) for advice on writing correct and effective sentences.

PROOFREADING

Go through the draft slowly, making sure you have written what you wanted to write. Get help from others. See [Appendix, Part C](#), for proofreading tips.

In addition to this model of the writing process, you need a problem-solving model for conducting the analysis that will enable you to write the recommendation report. The following discussion explains in more detail the problem-solving model shown in [Figure 18.1](#) on page 474.

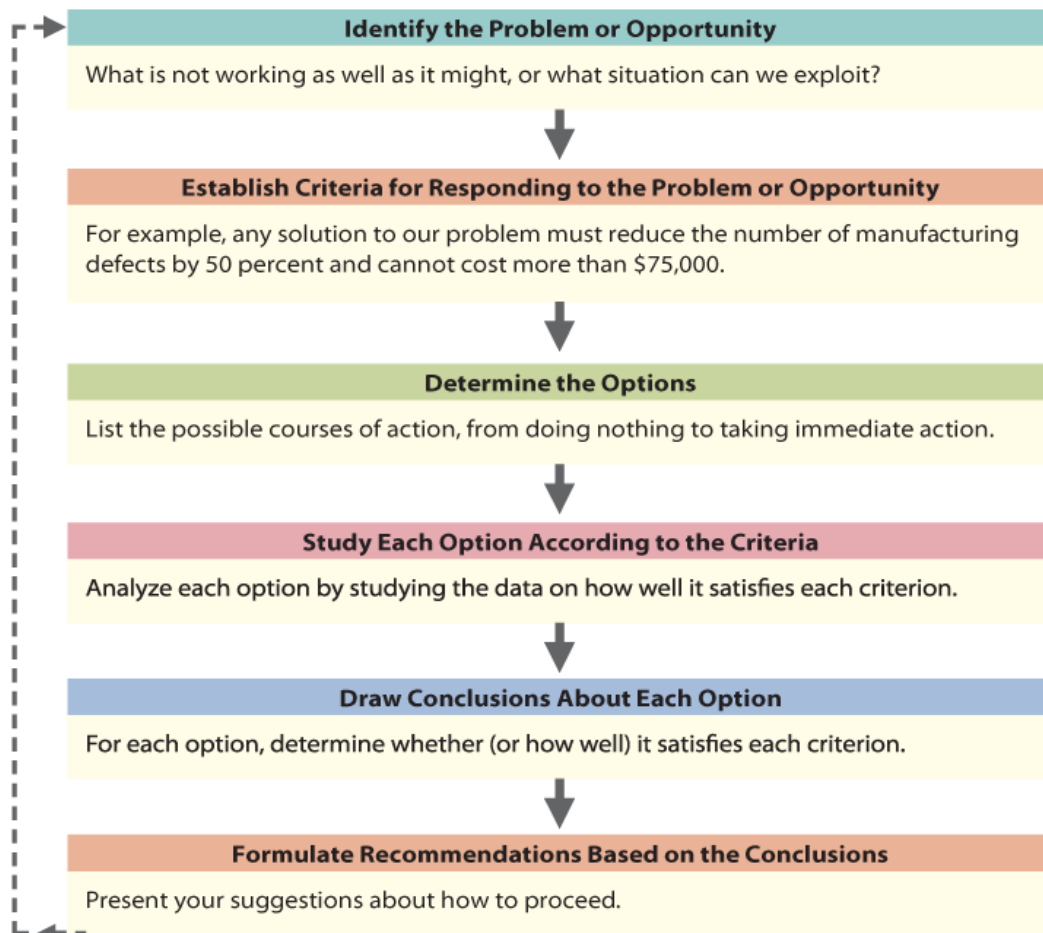


Figure 18.1

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FIGURE 18.1 A Problem-Solving Model for Recommendation Reports

As you work through this process, you might find that you need to go back to a previous step — or even to the first step — as you think more about your subject, audience, and purpose.

IDENTIFY THE PROBLEM OR OPPORTUNITY

What is not working or is not working as well as it might? What situation presents an opportunity to decrease costs or improve the quality of a product or service? Without a clear statement of your problem or opportunity, you cannot plan your research.

For example, your company has found that employees who smoke are absent and ill more often than those who don't smoke. Your supervisor has asked you to investigate whether the company should offer a free smoking-cessation program. The company can offer the program only if the company's insurance carrier will pay for it. The first thing you need to do is talk with the insurance agent; if the insurance carrier will pay for the program, you can proceed with your investigation. If the agent says no, you have to determine whether another insurance carrier offers better coverage or whether there is some other way to encourage employees to stop smoking.

ESTABLISH CRITERIA FOR RESPONDING TO THE PROBLEM OR OPPORTUNITY

Criteria are standards against which you measure your options. Criteria can be classified into two categories: *necessary* and *desirable*. For example, if you want to buy a photocopier for your business, necessary criteria might be that each copy cost less than two cents to produce and that the photocopier be able to handle oversized documents. If the photocopier doesn't fulfill those two criteria, you will not consider it further. By contrast, desirable criteria might include that the photocopier be capable of double-sided copying and stapling. Desirable criteria let you make distinctions among a variety of similar objects, objectives, actions, or effects. If a photocopier does not fulfill a desirable criterion, you will still consider it, although it will be less attractive.

Until you establish your criteria, you don't know what your options are. Sometimes you are given your criteria: your supervisor tells you how much money you can spend, for instance, and that figure becomes one of your necessary criteria. Other times, you derive your criteria from your research.

DETERMINE THE OPTIONS

After you establish your criteria, you determine your options. *Options* are potential courses of action you can take in responding to a problem or opportunity. Determining your options might be simple or complicated.

Sometimes your options are presented to you. For instance, your supervisor asks you to study two vendors for accounting services and recommend one of them. The options are Vendor A or Vendor B. That's simple.

In other cases, you have to consider a series of options. For example, your department's photocopier is old and breaking down. Your first decision is whether to repair it or replace it. Once you have answered that question, you might have to make more decisions. If you are going to replace it, what features should you look for in a new one? Each time you make a decision, you have to answer more questions until, eventually, you arrive at a recommendation. For a complicated scenario like this, you might find it helpful to use logic boxes or flowcharts to sketch the logic of your options, as shown in [Figure 18.2](#).

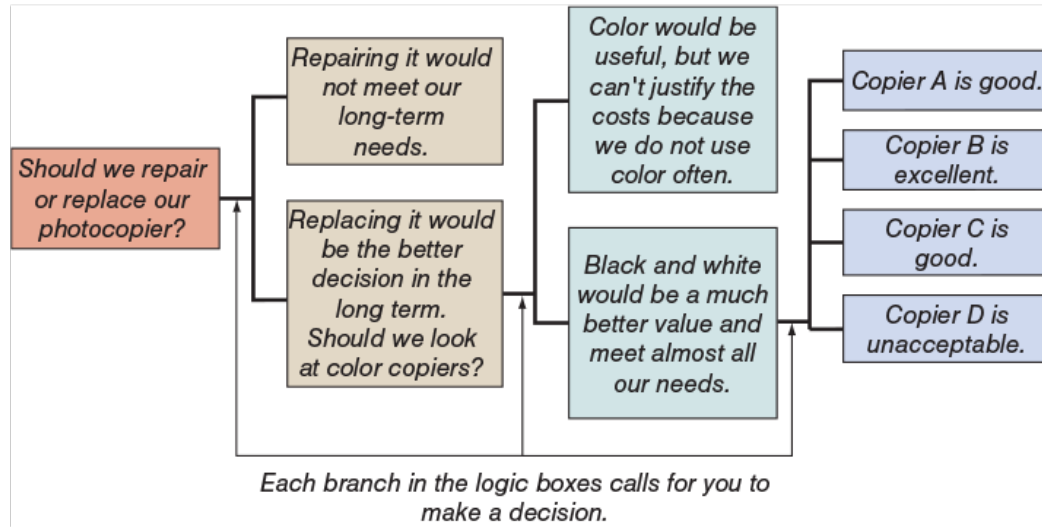


Figure 18.2

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FIGURE 18.2 Using Logic Boxes To Plot a Series of Options

As you research your topic, your understanding of your options will likely change. At this point, however, it is useful to understand the basic logic of your options or series of options.

STUDY EACH OPTION ACCORDING TO THE CRITERIA

Once you have identified your options (or series of options), study each one according to the criteria. For the photocopier project, secondary research would include studying articles about photocopiers in technical journals and specification sheets from the different manufacturers. Primary research might include observing product demonstrations as well as interviewing representatives from different manufacturers and managers who have purchased different brands.

For more about research techniques, see [Ch. 6](#).

To make the analysis of the options as objective as possible, professionals sometimes create a *decision matrix*, a tool for systematically evaluating each option according to each criterion. A decision matrix is a table (or a spreadsheet), as shown in [Figure 18.3](#) (on [page 476](#)). Here the writer is nearly at the end of his series of options: he is evaluating three similar photocopiers according to three criteria. Each criterion has its own weight, which suggests how important it is. The greater the weight, the more important the criterion.

Criteria and Weight		Options					
		Ricoh		Xerox		Sharp	
Criterion	Weight	Rating	Score ⁽¹⁾	Rating	Score ⁽¹⁾	Rating	Score ⁽¹⁾
Pages/min.	1	9	9	6	6	3	3
Duplex	3	1	3	3	9	10	30
Color	4	10	40	1	4	10	40
Total Score			52		19		73

⁽¹⁾Score = weight × rating.

Figure 18.3

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FIGURE 18.3 A Decision Matrix

Spreadsheet programs often contain templates for creating decision matrices.

As shown in [Figure 18.3](#), the criterion of pages per minute is relatively unimportant: it receives a weight

of 1. For this reason, the Ricoh copier, even though it receives a high rating for pages per minute (9), receives only a modest score of 9 ($1 \times 9 = 9$) on this criterion. However, the criterion of color copying is quite important, with a weight of 4. On this criterion, the Ricoh, with its rating of 10, achieves a very high score ($4 \times 10 = 40$).

But a decision matrix cannot stand on its own. You need to explain your methods. That is, in the discussion or in footnotes to the matrix, you need to explain the following three decisions:

- **Why you chose each criterion — or didn't choose a criterion the reader might have expected to see included.** For instance, why did you choose duplexing (double-sided printing) but not image scanning?
- **Why you assigned a particular weight to each criterion.** For example, why is the copier's ability to make color copies four times more important than its speed?
- **Why you assigned a particular rating to each option.** For example, why does one copier receive a rating of only 1 on duplexing, whereas another receives a 3 and a third receives a 10?

A decision matrix is helpful only if your readers understand your methods and agree with the logic you used in choosing the criteria and assigning the weight and ratings for each option.

Although a decision matrix has its limitations, it is useful for both you and your readers. For you as the writer, the main advantage is that it helps you do a methodical analysis. For your readers, it makes your analysis easier to follow because it clearly presents your methods and results.

DRAW CONCLUSIONS ABOUT EACH OPTION

Whether you use a decision matrix or a less formal means of recording your evaluations, the next step is to draw conclusions about the options you studied — by interpreting your results and writing evaluative statements about the options.

For the study of photocopiers, your conclusion might be that the Sharp model is the best copier: it meets all your necessary criteria and the greatest number of desirable criteria, or it scores highest on your matrix. Depending on your readers' preferences, you can present your conclusions in any one of three ways.

- **Rank all the options:** the Sharp copier is the best option, the Ricoh copier is second best, and so forth.
- **Classify all the options in one of two categories:** acceptable and unacceptable.
- **Present a compound conclusion:** the Sharp offers the most technical capabilities; the Ricoh is the best value.

FORMULATE RECOMMENDATIONS BASED ON THE CONCLUSIONS

If you conclude that Option A is better than Option B — and you see no obvious problems with Option A — recommend Option A. But if the problem has changed or your company's priorities or resources have changed, you might decide to recommend a course of action that is inconsistent with the conclusions you derived. Your responsibility is to use your judgment and recommend the best course of action.

ETHICS NOTE

PRESENTING HONEST RECOMMENDATIONS

As you formulate your recommendations, you might know what your readers want you to say. For example, they might want you to recommend the cheapest option, or one that uses a certain kind of technology, or one that is supplied by a certain vendor. Naturally, you want to be able to recommend what they want, but sometimes the facts won't let you. Your responsibility is to tell the truth — to do the research honestly and competently and then present the findings honestly. Your name goes on the report. You want to be able to defend your recommendations based on the evidence and your reasoning.

One worrisome situation that arises frequently is that none of the options would be a complete success or none would work at all. What should you do? You should tell the truth about the options, warts and all. Give the best advice you can, even if that advice is to do nothing.

Writing Recommendation Reports

The following discussion presents a basic structure for a recommendation report. Remember that every document you write should reflect its audience, purpose, and subject. Therefore, you might need to modify, add to, or delete some of the elements discussed here.

For more on collaboration, see [Ch. 4](#).

Reports that are lengthy and complex are often written collaboratively. As you begin the project that will culminate in the report, consider whether it would make sense to set up a shared writing space, a wiki, or some other method for you and your team members to write and edit the report collaboratively.

The easiest way to draft a report is to think of it as consisting of three sections: the front matter, the body, and the back matter. [Table 18.1](#) on page 478 shows the purposes of and typical elements in these three sections.

TABLE 18.1 ELEMENTS OF A TYPICAL REPORT

SECTION OF THE REPORT	PURPOSES OF THE SECTION	TYPICAL ELEMENTS IN THE SECTION
Front matter	• to orient the reader to the subject • to provide summaries for technical and managerial readers • to help readers navigate the report • to help readers decide whether to read the document	• letter of transmittal (p. 481) • cover (p. 481) • title page (p. 481) • abstract (p. 481) • table of contents (p. 482) • list of illustrations (p. 483) • executive summary (p. 485)
Body	• to provide the most comprehensive account of the project, from the problem or opportunity that motivated it to the methods and the most important findings	• introduction (p. 479) • methods (p. 479) • results (p. 479) • conclusions (p. 480) • recommendations (p. 480)
Back matter	• to present supplementary information, such as more detailed explanations than are provided in the body • to enable readers to consult the secondary sources the writers used	• glossary (p. 486) • list of symbols (p. 486) • references (p. 488) • appendixes (p. 489)

You will probably draft the body before the front and the back matter. This sequence is easiest because you think through what you want to say in the body and then draft the front and back matter based on it.

If you are writing your recommendation report for readers from other cultures, keep in mind that conventions differ from one culture to another. In the United States, reports are commonly organized from general to specific. That is, the most general information (the abstract and the executive summary) appears early in the report. In many cultures, however, reports are organized from specific to general. Detailed discussions of methods and results precede discussions of the important findings.

Similarly, elements of the front and back matter are rooted in culture. For instance, in some cultures — or in some organizations — writers do not create executive summaries, or their executive summaries differ in length or organization from those discussed here. According to interface designer [Pia Honold \(1999\)](#), German users of high-tech products rely on the table of contents in a manual because they like to understand the scope and organization of the manual. Therefore, writers of manuals for German readers should include comprehensive, detailed tables of contents.

Study samples of writing produced by people from the culture you are addressing to see how they organize their reports and use front and back matter.

WRITING THE BODY OF THE REPORT

The elements that make up the body of a report are discussed here in the order in which they usually appear

in a report. However, you should draft the elements in whatever order you prefer. The sample recommendation report shown in [Figure 18.8](#) (pp. 490–513) includes these elements.

Introduction The introduction helps readers understand the technical discussion that follows. Start by analyzing who your readers are. Then consider these questions:

- **What is the subject of the report?** If the report follows a proposal and a progress report, you can probably copy this information from one of those documents, modifying it as necessary. Reusing this information is efficient and ethical.
- **What is the purpose of the report?** The purpose of the report is not the purpose of the project. The purpose of the report is to explain a project from beginning (identifying a problem or an opportunity) to end (presenting recommendations).
- **What is the background of the report?** Include this information, even if you have presented it before; some of your readers might not have read your previous documents or might have forgotten them.
- **What are your sources of information?** Briefly describe your primary and secondary research, to prepare your readers for a more detailed discussion of your sources in subsequent sections of the report.
- **What is the scope of the report?** Indicate the topics you are including, as well as those you are not.
- **What are the most significant findings?** Summarize the most significant findings of the project.
- **What are your recommendations?** In a short report containing a few simple recommendations, include those recommendations in the introduction. In a lengthy report containing many complex recommendations, briefly summarize them in the introduction, then refer readers to the more detailed discussion in the recommendations section.
- **What is the organization of the report?** Indicate your organizational pattern so that readers can understand where you are going and why.
- **What key terms are you using in the report?** The introduction is an appropriate place to define new terms. If you need to define many terms, place the definitions in a glossary and refer readers to it in the introduction.

Methods The methods section answers the question “What did you do?” In drafting the methods section, consider your readers’ knowledge of the field, their perception of you, and the uniqueness of the project, as well as their reasons for reading the report and their attitudes toward the project. Provide enough information to enable readers to understand what you did and why you did it that way. If others will be using the report to duplicate your methods, include sufficient detail.

Results Whereas the methods section answers the question “What did you do?” the results section answers the question “What did you see or determine?”

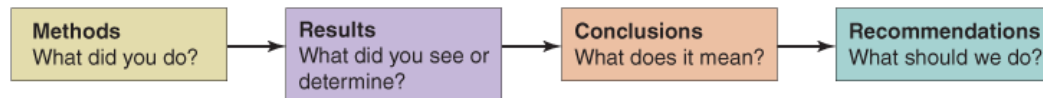
Results are the data you discovered or compiled. Present the results objectively, without comment. Save the interpretation of the results — your conclusions — for later. If you combine results and conclusions, your readers might be unable to follow your reasoning and might not be able to tell whether the evidence justifies your conclusions.

Your audience’s needs will help you decide how to structure the results. How much they know about the subject, what they plan to do with the report, what they expect your recommendation(s) to be — these and many other factors will affect how you present the results. For instance, suppose that your company is considering installing a VoIP phone system that will enable employees to make telephone calls over the Internet, and you conducted the research on the available systems. In the introduction, you explain the disadvantages of the company’s current phone system. In the methods section, you describe how you established the criteria you applied to the available phone systems, as well as your research procedures. In the results section, you provide the details of each phone system you are considering, as well as the results of your evaluation of each system.

Conclusions Conclusions answer the question “What does it mean?” They are the implications of the results. To draw conclusions, you need to think carefully about your results, weighing whether they point clearly to a single meaning.

For more about evaluating evidence and drawing conclusions, see Ch. 6, pp. 126–30.

Recommendations Recommendations answer the question “What should we do?” As discussed earlier in this chapter, recommendations do not always flow directly from conclusions. Always consider recommending that the organization take no action or no action at this time.



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GUIDELINES: Writing Recommendations

As you draft your recommendations, consider the following four factors:

- ▶ **Content.** Be clear and specific. If the project has been unsuccessful, don't simply recommend that your readers "try some other alternatives." What alternatives do you recommend and why?
- ▶ **Tone.** When you recommend a new course of action, be careful not to offend whoever formulated the earlier course. Do not write that following your recommendations will "correct the mistakes" that have been made. Instead, your recommendations should "offer great promise for success." A restrained, understated tone is more persuasive because it shows that you are interested only in the good of your organization, not personal rivalries.
- ▶ **Form.** If the report leads to only one recommendation, use traditional paragraphs. If the report leads to more than one recommendation, consider a numbered list.
- ▶ **Location.** Consider including a summary of the recommendations — or, if they are brief, the full list — after the executive summary or in the introduction as well as at the end of the body of the report.

WRITING THE FRONT MATTER

Front matter is common in reports, proposals, and manuals. As indicated in [Table 18.1](#) on page 478, front matter helps readers understand the whole report and find the information they seek. Most organizations have established formats for front matter. Study the style guide used in your company or, if there isn't one, examples from the files to see how other writers have assembled their reports.

For more about formatting a letter, see *Ch. 14*, [p. 367](#).

Letter of Transmittal In the letter of transmittal, which can take the form of a letter or a memo, the writer introduces the primary reader to the purpose and content of the report. In addition, the writer often states who authorized or commissioned the report and acknowledges any assistance he or she received in carrying out the project. The letter of transmittal is attached to the report, bound in with it, or simply placed on top of it. Even though the letter likely contains little information that is not included elsewhere in the report, it is important because it is the first thing the reader sees. It establishes a courteous and professional tone. Letters of transmittal are customary even when the writer and the reader both work for the same organization. See the beginning of the sample recommendation report shown in [Figure 18.8](#) (pp. 490–91) for an example of a transmittal letter in the form of a memo.

Cover Although some reports do not have covers, reports that will be handled a lot or that will be exposed to harsh environmental conditions, such as water or grease, often do. The cover usually contains the title of the report, the name and position of the writer, the date of submission, and the name or logo of the writer's company. Sometimes the cover also includes a security notice or a statement of proprietary information.

Title Page A title page includes at least the title of the report, the name of the writer, and the date of submission. A more complex title page might also include a project number, a list of additional personnel who contributed to the report, and a distribution list. See the third page of the sample recommendation report shown in [Figure 18.8](#) for an example of a title page.

Abstract An abstract is a brief technical summary of the report, usually no more than 200 words. It addresses readers who are familiar with the technical subject and who need to decide whether they want to read the full report. In an abstract, you can use technical terminology and refer to advanced concepts in the field. Abstracts are sometimes published by abstract services, which are useful resources for researchers.

Abstracts often contain a list of half a dozen or so keywords, which are entered into electronic databases. As the writer, one of your tasks is to think of the various keywords that should lead people to the information in your report.

There are two types of abstracts: descriptive and informative. A *descriptive abstract* — sometimes called a *topical*, *indicative*, or *table-of-contents abstract* — describes the kinds of information contained in the report. It does not provide the major findings (important results, conclusions, or recommendations). It simply lists the topics covered, giving equal emphasis to each. [Figure 18.4](#) is a descriptive abstract from a report by a utility company about its pilot program for measuring how much electricity its customers are using. A

descriptive abstract is used most often when space is at a premium. Some government proposals, for example, call for a descriptive abstract to be placed at the bottom of the title page.

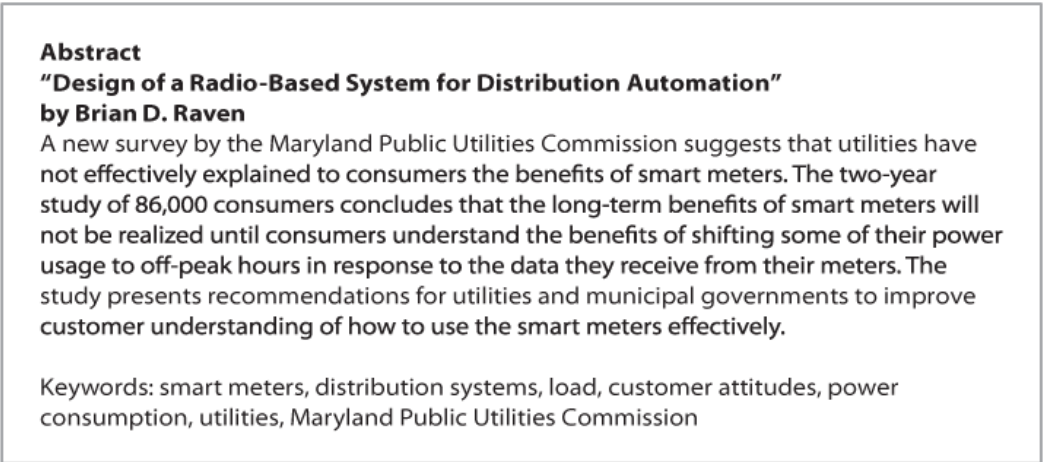


Figure 18.4
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FIGURE 18.4 Descriptive Abstract

This abstract is descriptive rather than informative because it does not present any of the major data from the survey or present the recommendations that are mentioned in the final sentence.

An *informative abstract* presents the major findings. If you don't know which kind of abstract the reader wants, write an informative one.

The distinction between descriptive and informative abstracts is not clear-cut. Sometimes you might have to combine elements of both in a single abstract. For instance, if there are 15 recommendations — far too many to list — you might simply note that the report includes numerous recommendations.

See page ii of the sample recommendation report shown in [Figure 18.8](#) for an example of an informative abstract.

Table of Contents The table of contents, the most important guide to navigating the report, has two main functions: to help readers find the information they want and to help them understand the scope and organization of the report.

A table of contents uses the same headings as the report itself. Therefore, to create an effective table of contents, you must first make sure that the headings are clear and that you have provided enough of them. If the table of contents shows no entry for five or six pages, you probably need to partition that section of the report into additional subsections. In fact, some tables of contents have one entry, or even several, for every report page.

The following table of contents, which relies exclusively on generic headings (those that describe an entire class of items), is too general to be useful.

Table of Contents	
Introduction.....	1
Materials	3
Methods.....	4
Results.....	19
Recommendations	23
References	26
Appendixes	28

This methods section, which goes from page 4 to page 18, should have subentries to break up the text and to help readers find the information they seek.

For more informative headings, combine the generic and the specific:
Recommendations: Five Ways to Improve Information-Retrieval Materials Used in the Calcification Study
Results of the Commuting-Time Analysis
For more about text attributes, see Ch. 11, [p. 263](#).

Then build more subheadings into the report itself. For instance, for the “Recommendations” example above, you could create a subheading for each of the five recommendations. Once you have established a clear system of headings within the report, use the same text attributes — capitalization, boldface, italics, and outline style (traditional or decimal) — in the table of contents.

When adding page numbers to your report, remember two points:

- The table of contents page does not contain an entry for itself.
- Front matter is numbered using lowercase Roman numerals (i, ii, and so forth), often centered at the bottom of the page. The title page of a report is not numbered, although it represents page i. The abstract is usually numbered [page ii](#). The table of contents is usually not numbered, although it represents [page iii](#). The body of the report is numbered with Arabic numerals (1, 2, and so on), typically in the upper outside corner of the page.

See [page iii](#) of the sample recommendation report shown in [Figure 18.8](#) for an example of a table of contents.

List of Illustrations A *list of illustrations* is a table of contents for the figures and tables. List the figures first, then the tables. (If the report contains only figures, call it a *list of figures*. If it contains only tables, call it a *list of tables*.) You may begin the list of illustrations on the same page as the table of contents, or you may begin the list on a separate page and include it in the table of contents. [Figure 18.5](#) shows a list of illustrations.

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Figure 18.5
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FIGURE 18.5 [List of Illustrations](#)

TECH TIP

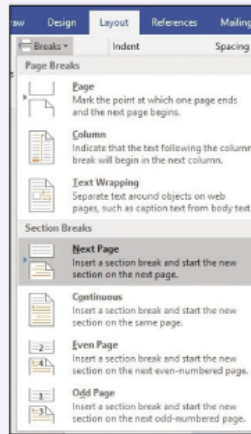
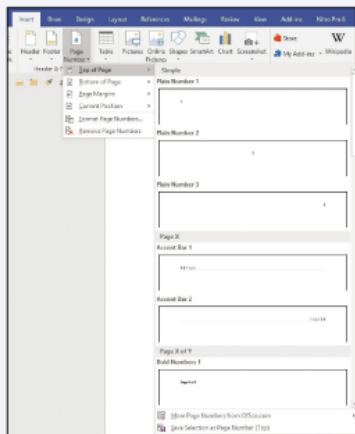
Why To Make a Long Report Navigable

Whether your report is being read in print or online, your readers will appreciate page navigation guides to help them find the information they need. Headers, footers, and page numbers are useful, especially in print documents and PDFs, to help readers know where they are in a document. A table of contents can direct or link readers to the right location as well as provide them with a sense of the scope and organization of the report.

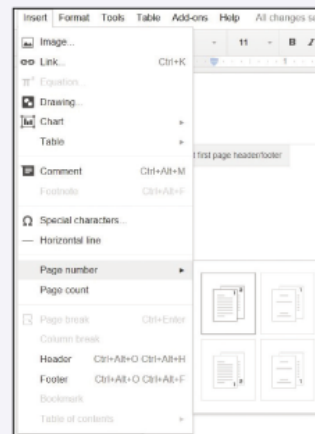
How To Make a Long Report Navigable

With programs such as Microsoft Word or Google Docs, you can easily format a report to include page navigation tools. To insert headers, footers, and page numbers, choose the function you want from the **Insert** tab. Both Word and Google Docs allow you to set up the header differently on the first page of the document. Word offers additional design options, allowing you to insert **section breaks** (in the **Layout** tab) so that you can have different headers and footers in different sections of a long report.

Microsoft Word

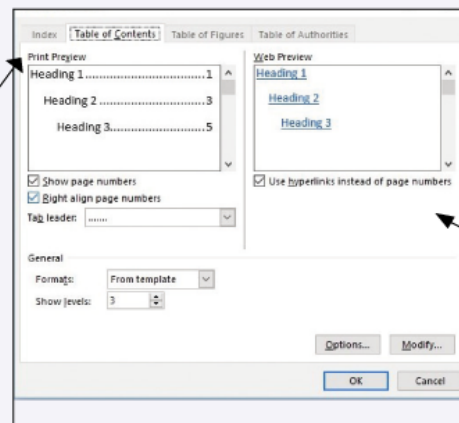
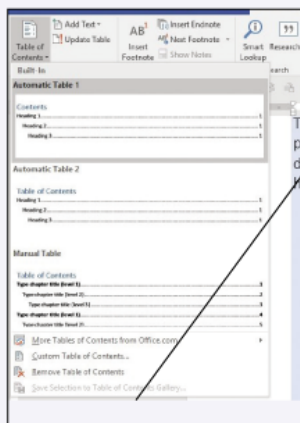


Google Docs



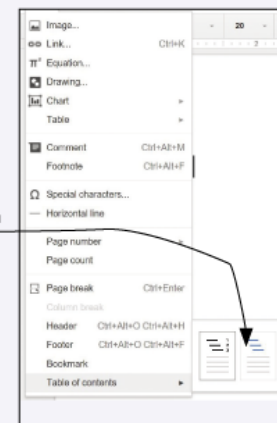
To create a preformatted table of contents, use Word's **Table of Contents** drop-down menu in the **Reference** tab; in Google Docs, choose the **Table of Contents** feature from the **Insert** tab. For online documents, you can choose to use hyperlinks instead of page numbers in your table of contents. As with headers, footers, and page numbers, Word offers additional customization tools for the table of contents.

Microsoft Word



hyperlink option

Google Docs



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Executive Summary The executive summary (sometimes called the *epitome*, *executive overview*, *management summary*, or *management overview*) is a brief condensation of the report addressed to managers. Most managers need only a broad understanding of the projects that an organization undertakes and how they fit together into a coherent whole.

An executive summary for a report of under 20 pages is typically one page (double-spaced). For longer reports, the maximum length is often calculated as a percentage of the report, such as 5 percent.

The executive summary presents information to managers in two parts:

- **Background.** This section explains the problem or opportunity: what was not working or was not working effectively or efficiently, or what potential modification of a procedure or product had to be analyzed.
- **Major findings and implications.** This section might include a brief description — only one or two sentences — of the methods, followed by a full paragraph about the conclusions and recommendations.

An executive summary differs from an informative abstract. Whereas an abstract focuses on the technical subject (such as whether the public is taking advantage of the data from smart electric meters), an executive

summary concentrates on the managerial implications of the subject for a particular company (such as whether PECO, the Philadelphia utility company, should carry out a public-information campaign to educate customers about how to use their smart meters).

GUIDELINES: Writing an Executive Summary

Follow these five suggestions in writing executive summaries.

- ▶ **Use specific evidence in describing the background.** For most managers, the best evidence is in the form of costs and savings. Instead of writing that the equipment you are now using to cut metal foil is ineffective, write that the equipment jams once every 72 hours on average, costing \$400 in materials and \$2,000 in productivity each time. Then add up these figures for a monthly or an annual total.
- ▶ **Be specific in describing research.** For instance, research suggests that a computerized energy-management system could cut your company's energy costs by 20 to 25 percent. If the company's energy costs last year were \$300,000, it could save \$60,000 to \$75,000.
- ▶ **Describe the methods briefly.** If you think your readers are interested, include a brief description of your methods — no more than a sentence or two.
- ▶ **Describe the findings according to your readers' needs.** If your readers want to know your results, provide them. If your readers are unable to understand the technical data or are uninterested, go directly to the conclusions and recommendations.
- ▶ **Ask an outside reader to review your draft.** Give the summary to someone who has no connection to the project. That person should be able to read your summary and understand what the project means to the organization.

See page 1 of the sample recommendation report shown in [Figure 18.8](#) for an example of an executive summary.

DOCUMENT ANALYSIS ACTIVITY

Analyzing an Executive Summary

This executive summary comes from a corporate report on purchasing Android tablets for employees. The questions below ask you to think about the discussion of executive summaries (beginning on [p. 485](#)).

1. How clearly do the writers explain the background? Identify the problem or opportunity they describe in this executive summary.
2. Do the writers discuss the methods? If so, identify the discussion.
3. Identify the findings: the results, conclusions, and recommendations. How clearly have the writers explained the benefits to the company?

Executive Summary

On May 11, we received approval to study whether Android tablets could help our 20 engineers receive email, monitor their schedules, take notes, and access reference sources they need in the field. In our study, we addressed these problems experienced by many of our engineers:

- They have missed deadlines and meetings and lost client information.
- They have been unable to access important files and reference materials from the field.
- They have complained about the weight — sometimes more than 40 pounds — of the binders and other materials that they have to carry.
- They have to spend time keyboarding notes that they take in the field.

In 2017, missed meetings and other schedule problems cost the company over \$400,000 in lost business. And our insurance carrier settled a claim for \$50,000 from an engineer who experienced back and shoulder problems due to the weight of his pack.

We researched the capabilities of Android tablets then established these criteria for our

analysis:

- The device must weigh less than 15 ounces.
- It must run on Android 6.0 or higher.
- It must have at least 3GB RAM.
- It must have at least a 2-GHz Quad Core.
- It must have Wi-Fi and LTE 4G connectivity.
- It must have at least a 10-inch screen.
- It must have a camera with a resolution of 8.1MP or better.
- It must be Microsoft Office compatible.
- It must cost \$700 or less.

On the basis of our analysis, we recommend that the company purchase 20 Sony Xperia Z4 tablets, for a total cost of \$11,180. These devices best meet all our technical and cost criteria.

WRITING THE BACK MATTER

The back matter of a recommendation report might include the following items: glossary, list of symbols, references, and appendixes.

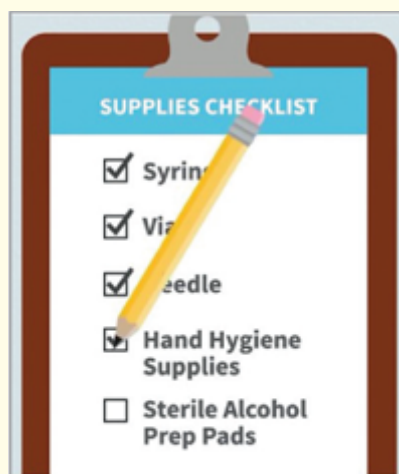
Glossary and List of Symbols A *glossary*, an alphabetical list of definitions, is particularly useful if some of your readers are unfamiliar with the technical vocabulary in your report. Instead of slowing down your discussion by defining technical terms as they appear, you can use boldface, or some similar method of highlighting words, to indicate that the term is defined in the glossary. The first time a boldfaced term appears, explain this system in a footnote. For example, the body of the report might say, “Thus the **positron*** acts as the ...,” while a note at the bottom of the page explains:

* This and all subsequent terms in boldface are defined in the Glossary, page 00.



DOCUMENT ANALYSIS ACTIVITY

To analyze a recommendation report presented as a video, go to LaunchPad.



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Bedford/St. Martin's,
Information from CDC, 2014: www.oneandonlycampaign.org/content/audio-video.

Check Your Steps! Make Every Injection Safe

Although a glossary is usually placed near the end of the report, before the appendixes, it can also be placed immediately after the table of contents if the glossary is brief (less than a page) and if it defines essential terms. [Figure 18.6](#) shows an excerpt from a glossary.

Glossary	
Applicant:	A state agency, local government, or eligible private nonprofit organization that submits a request to the Grantee for disaster assistance under the state's grant.
Case Management:	A systems approach to providing equitable and fast service to applicants for disaster assistance. Organized around the needs of the applicant, the system consists of a single point of coordination, a team of on-site specialists, and a centralized, automated filing system.
Cost Estimating Format (CEF):	A method for estimating the total cost of repair for large, permanent projects by use of construction industry standards. The format uses a base cost estimate and design and construction contingency factors, applied as a percentage of the base cost.
Declaration:	The President's decision that a major disaster qualifies for federal assistance under the Stafford Act.
Hazard Mitigation:	Any cost-effective measure that will reduce the potential for damage to a facility from a disaster event.

Figure 18.6
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FIGURE 18.6 Glossary

A list of symbols is formatted like a glossary, but it defines symbols and abbreviations rather than terms. It, too, may be placed before the appendixes or after the table of contents. [Figure 18.7](#) shows a list of symbols.

List of Symbols	
β	beta
CRT	cathode-ray tube
γ	gamma
Hz	hertz
rcvr	receiver
SNR	signal-to-noise ratio
uhf	ultra high frequency
vhf	very high frequency

Figure 18.7
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FIGURE 18.7 List of Symbols

References Many reports contain a list of references (sometimes called a *bibliography* or *list of works cited*) as part of the back matter. References and the accompanying textual citations throughout the report are called *documentation*. Documentation acknowledges your debt to your sources, establishes your credibility as a writer, and helps readers locate and review your sources. See [Appendix, Part B](#), for a detailed discussion of documentation. See page 18 of the sample recommendation report shown in [Figure 18.8](#) for an example of a reference list.

Appendixes An *appendix* is any section that follows the body of the report (and the glossary, list of symbols, or reference list). Appendixes (or *appendices*) convey information that is too bulky for the body of the report or that will interest only a few readers. Appendixes might include maps, large technical diagrams or charts, computations, computer printouts, test data, and texts of supporting documents.

Appendixes, usually labeled with letters rather than numbers (Appendix A, Appendix B, and so on), are listed in the table of contents and are referred to at appropriate points in the body of the report. Therefore,

they are accessible to any reader who wants to consult them. See page 19 of the sample recommendation report shown in [Figure 18.8](#) for an example of an appendix.

Sample Recommendation Report

Figure 18.8 is the recommendation report on the tablet project proposed in Figure 16.6 (pp. 439–45) in Chapter 16. The progress report for this project appears in Figure 17.4 (pp. 457–64) in Chapter 17.

Transmittal “letters” can be presented as memos.

The writers include their titles and that of their primary reader. This way, future readers will be able to readily identify the reader and writers.

The subject heading indicates the subject of the report (the tablet study at RRMCC) and the purpose of the report (recommendation report).

The purpose of the study. Notice that the writers link the recommendation report to the proposal, giving them an opportunity to state the main tasks they carried out in the study.

The methods the writers used to carry out the research.

The principal findings: the results and conclusions of the study. Notice that the writers state that they cannot be sure whether the technical information they have found is accurate. Is it okay to state that you are unsure about something? Yes, as long as you then propose a way to become sure about it.



Rawlings Regional Medical Center
7500 Bannock Avenue
Rawlings, MT 59211

Date: December 14, 2013
To: Jill Bremerton, M.D.
Chief Executive Officer
Rawlings Regional Medical Center
From: Jeremy Elkins, Director of Information Technology
Eloise Carruthers, Director of Nursing
Rawlings Regional Medical Center
Subject: Recommendation Report for the Tablet Study at RRMCC

Attached is the report for our study, “Selecting a Tablet Computer for the Clinical Staff at Rawlings Regional Medical Center: A Recommendation Report.” We completed the tasks described in our proposal of October 6, 2013: familiarizing ourselves with tablet use by clinical staff in hospitals across the country, assessing RRMCC clinical staff’s knowledge of and attitudes toward tablet use, studying different models for administering tablet use, determining the criteria by which we might evaluate tablets, and performing the evaluations.

To carry out these tasks, we performed secondary and primary research. We studied the literature on tablet use, distributed a questionnaire to RRMCC clinical staff who own tablets, and interviewed Dr. Bremerton. Then, we collected and analyzed our data and wrote the report.

Our main findings are that the clinical staff who already own tablets are very receptive to the idea of using tablets in a clinical setting and slightly prefer having the hospital supply the tablets. We, too, think the hospital-supplied model is preferable to the bring-your-own-device (BYOD) model. Although the best tablets for our needs would be those designed and built for health-care applications, those are too expensive for our budget. Because reports on the technical characteristics of computer products are notoriously unreliable, we cannot be sure whether the many

Figure 18.8

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Letter to Jill Bremerton, M.D.
page 2
December 14, 2013

general-purpose tablets can meet our standards for ease of disinfection or durability, and we are not sure whether they have sufficient battery life.

We recommend one of two courses of action: reconsidering the cost criterion or testing a representative sample of general-purpose tablets for disinfection and the other technical characteristics and letting the clinical staff try them out.

We appreciate the trust you have shown in inviting us to participate in this phase of the feasibility study, and we would look forward to working with you on any follow-up activities. If you have any questions or comments, please contact Jeremy Elkins, at jelkins@rrmc.org or at 555-444-3967, or Eloise Carruthers, at ecarruthers@rrmc.org or at 555-444-3982.

The major recommendation. The writers ask their supervisor if she will reconsider whether the hospital can afford tablets specifically designed for health-care environments. That's not insubordination. Just be polite about it.

A polite offer to participate further or to provide more information.

Figure 18.8
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(continued)

A good title indicates the subject and purpose of the document. One way to indicate the purpose is to use a generic term — such as analysis, recommendation, summary, or instructions — in a phrase following a colon. For more about titles, see Ch. 9, p. 193.

The names and positions of the principal reader and the writers of the document.

The date the document was submitted.

The name or logo of the writers' organization often is presented at the bottom of the title page.

**Selecting a Tablet Computer for
the Clinical Staff at
Rawlings Regional Medical Center:
A Recommendation Report**

Prepared for: Jill Bremerton, M.D.
Chief Executive Officer
Rawlings Regional Medical Center

Prepared by: Jeremy Elkins, Director of Information Technology
Eloise Carruthers, Director of Nursing

December 14, 2013



Rawlings Regional Medical Center
7500 Bannock Avenue
Rawlings, MT 59211

Figure 18.8

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(continued)

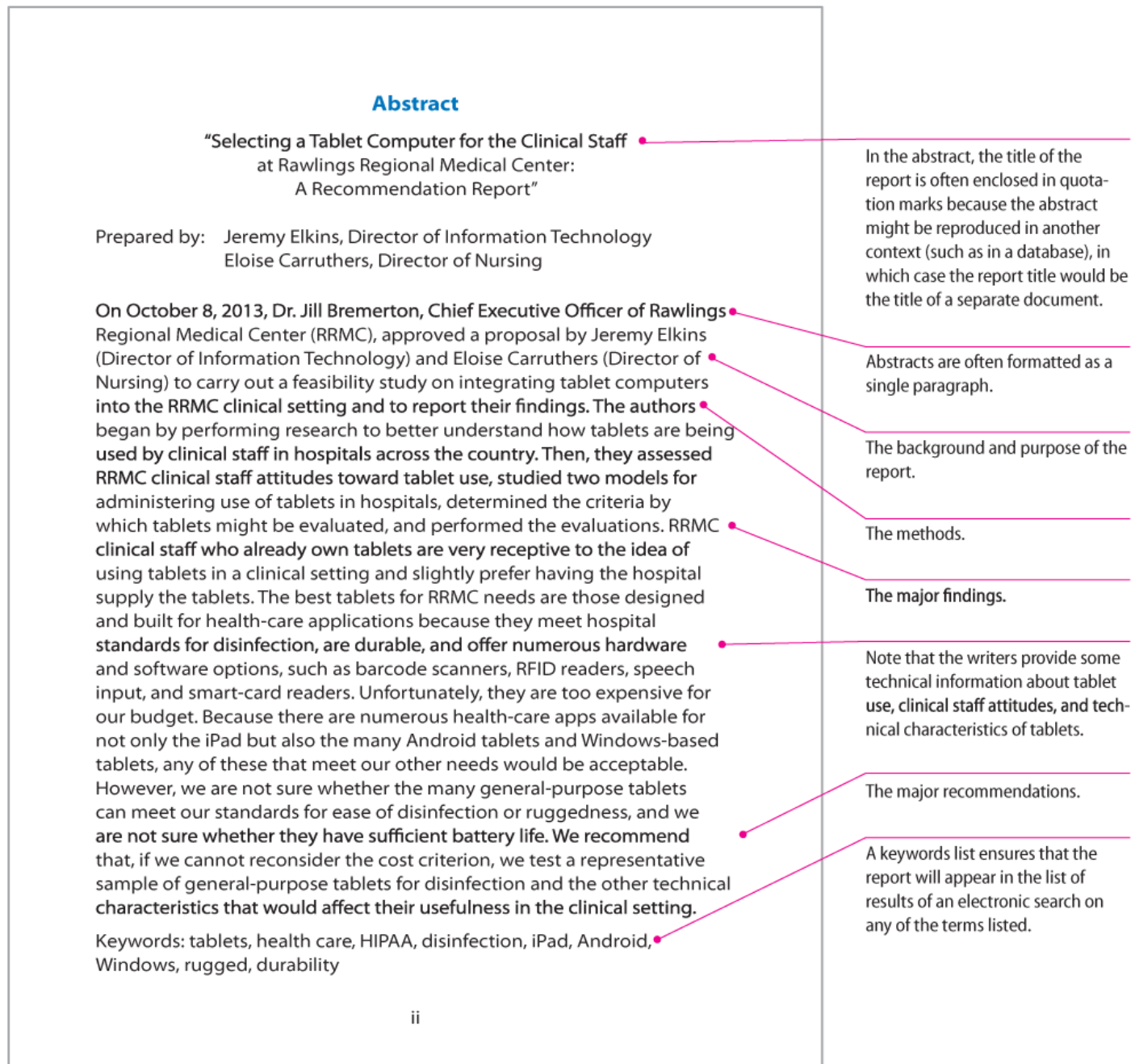


Figure 18.8
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(continued)

Note that the typeface and design of the headings in the table of contents mirror the typeface and design of the headings in the report itself.

In this table of contents, the two levels of headings are distinguished by type style (boldface versus italic) and indentation.

Table of Contents	
• Executive Summary	1
Introduction	2
• Research Methods	4
<i>Task 1: Acquire a basic understanding of tablet use by clinical staff across the nation</i>	4
<i>Task 2: Determine the RPMC clinical staff's knowledge of and attitudes toward tablet use</i>	5
<i>Task 3: Assess the BYOD and hospital-owned tablet models</i>	6
<i>Task 4: Establish criteria for evaluating tablets</i>	6
<i>Task 5: Assess available tablets based on our criteria</i>	7
<i>Task 6: Analyze our data and prepare this recommendation report</i>	7
Results	8
<i>Task 1: Acquire a basic understanding of tablet use by clinical staff across the nation</i>	8
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Conclusions	15
<i>Tablet use by clinical staff</i>	15
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Recommendation	17
<i>Option 1: Reconsider the cost criterion</i>	17
<i>Option 2: Test a representative sample of general-purpose tablets</i>	17
References	18
Appendix: Clinical-Staff Questionnaire	19

Figure 18.8
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(continued)

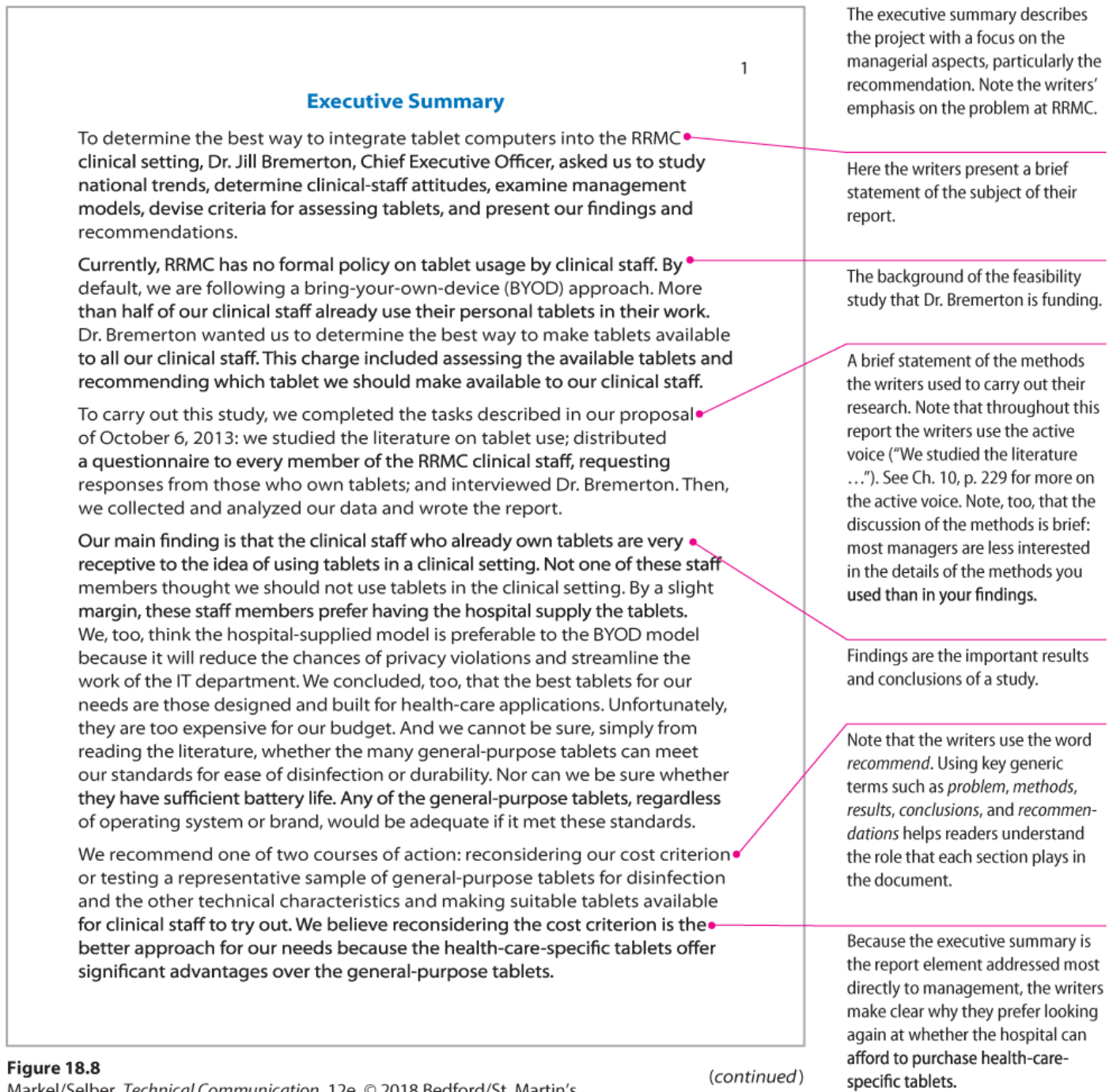


Figure 18.8
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(continued)

• Introduction

Some organizations require that each first-level heading begin on a new page.

A brief statement of the context for the report.

Note that the word *currently* is used to introduce the background of the study: the current situation is unsatisfactory for several reasons.

A formal statement of the task the committee was asked to perform. The writers paraphrase from the memo Dr. Bremerton gave them. Often in technical communication, you will quote or paraphrase words your reader wrote to you. This practice reminds the reader of the context and shows that you are carrying out your tasks professionally.

The writers incorporate a brief overview of their methods into the list of tasks.

The writers devote two paragraphs to their principal findings. The introduction can present the major findings of a report; technical communication is not about drama and suspense.

To determine the best course of action for integrating tablet computers into the RPMC clinical setting, Dr. Jill Bremerton, RPMC Chief Executive Officer, asked us to study national trends, determine clinical-staff knowledge of and attitudes toward tablets, examine administrative models for tablet use, devise criteria for assessing tablets, and present our findings and recommendations.

Currently, RPMC has no formal policy on tablet usage by clinical staff. By default, we are following a bring-your-own-device (BYOD) approach. More than half of our clinical staff use their personal tablets in their work. This situation is not ideal because not all clinical staff are taking advantage of the enormous potential for improving patient care and reducing costs by using tablets, and IT is struggling to keep up with the work needed to ensure that all the different tablets are working properly and that any information-security protocols required by HIPAA and the Affordable Care Act are not being violated.

Therefore, Dr. Bremerton wanted us to determine the best way to make tablets available to all our clinical staff. Specifically, Dr. Bremerton asked us to perform five tasks:

- Determine how tablets are being used by clinical staff across the nation. We performed secondary research to complete this task.
- Determine the RPMC clinical staff's current knowledge of and attitudes toward tablet use. To complete this task, we wrote and distributed a survey to clinical staff who already own tablets.
- Determine how hospitals administer the use of tablets in a clinical setting. We performed secondary research to complete this task.
- Establish criteria by which we might evaluate tablets for RPMC. We performed secondary research to complete this task. In addition, we interviewed Dr. Bremerton for her suggestions about the most important criterion.
- Assess available tablets based on our criteria. We performed secondary research to complete this task.

We found that tablet use in clinical settings is increasing quickly, and that clinical staff are finding many ways to use tablets to improve care and save time and money. Among the clinical staff at RPMC who already own

Figure 18.8
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(continued)

tablets, nearly half own an iPad and nearly half an Android tablet, most consider themselves expert users of their tablets, and more than two-thirds already use them in the clinical setting; by a slim margin, they would prefer a hospital-supplied model for tablet use to a BYOD model. Our research on the two models for making tablets available also found more advantages and fewer disadvantages to the hospital-supplied model.

Our principal finding regarding tablets themselves is that the best tablets for our use would be those designed and built for health-care applications. These tablets are rugged and easy to disinfect, and they offer a wealth of hardware and software options that would streamline our daily tasks without introducing any risks either to patient care or to data privacy. Unfortunately, purchasing enough of these tablets for all clinical staff would exceed our budget. To determine whether any of the general-purpose tablets meet all our needs, we would need to conduct hands-on testing regarding disinfection, battery life, durability, and several other technical criteria.

We recommend, first, that we reassess whether the budget will permit consideration of any of the health-care-specific tablets. If that is not possible, we recommend that we ask manufacturers of a small set of general-purpose tablets to let us test their products and invite our clinical staff to try them. This option would yield data that would help us decide how to proceed.

In the following sections, we provide additional details about our research methods, the results we obtained, the conclusions we drew from those results, and our recommendation.

Notice the writers' use of the phrase "we recommend." Repeating key terms in this way helps readers understand the logic of a report and concentrate on the technical information it contains.

An advance organizer for the rest of the report.

Figure 18.8
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(continued)

Research Methods

We began our research by interviewing Dr. Bremerton, who emphasized that we need to maintain our focus on our priorities — patient care and service to the community — and not let technical questions about the tablets distract us from the needs of our clinical staff. “We’re not going to do anything without the approval of the doctors and nurses,” she said.

Early on in our research, we discovered an article that corroborated what Dr. Bremerton had told us (Narisi, 2013). Two keys to doing the research were to focus on security features — data-privacy issues mandated in HIPAA and in the Affordable Care Act — and to get the clinical staff’s input.

To perform the analysis requested by Dr. Bremerton, we broke the project into six tasks:

1. acquire a basic understanding of tablet use by clinical staff across the nation
2. determine the RPMC clinical staff’s knowledge of and attitudes toward tablet use
3. assess the BYOD and hospital-owned tablet models
4. establish criteria for evaluating tablets
5. assess available tablets based on our criteria
6. analyze our data and prepare this recommendation report

In the following discussion of how we performed each task, we explain the reasoning that guided our research.

• **Task 1: Acquire a basic understanding of tablet use by clinical staff across the nation**

Dr. Bremerton pointed us to a number of resources on tablet use in clinical settings. In addition, we conducted our own literature review. Most of the research we studied fell into one of four categories:

- general introductions to tablet use in trade magazines and general-interest periodicals
- more focused articles about tablets used in health care
- technical specifications of tablets provided in trade magazines and on manufacturers’ websites
- trade-magazine articles about best practices for managing the use of tablets in clinical settings

The writers use the same task organization as in the proposal and the progress report.

Figure 18.8

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(continued)

As we expected, the information we acquired was a mix of user opinions, benchmark-test results, and marketing. We relied most heavily on case studies from hospital administrators and technical specialists in health IT. Because of the unreliability of information on manufacturers' websites, we were hesitant to rely on claims about product performance.

Task 2: Determine the RPMC clinical staff's knowledge of and attitudes toward tablet use

On October 14, 2013, we sent all 147 clinical staff members an email linking to a four-question Qualtrics survey. The email indicated that we were seeking opinions about tablet use by clinical-staff members who already own tablets and made clear that the survey would take less than two minutes to complete.

Initially, we considered collecting data from all 147 clinical staff members. However, as we constructed that survey, we realized that it would be cumbersome to gather and track information from three different populations: those who didn't own a tablet, those who owned one but didn't use it in the clinic, and those who owned one and did use it in the clinic. Eliciting information from these different groups would require a long, complex questionnaire and some statistical analysis to separate out the attitudes.

For this reason, we decided to address only the tablet owners, since we assumed that this group would constitute approximately two-thirds of the clinical staff (Drinkwater, 2013). With this streamlined focus, we were able to create a very brief survey, one that would likely yield a high return rate. We assumed, too, that the opinions expressed by current tablet owners would likely be of more value in helping us plan a formal program of tablet use than those of clinicians who were less likely to be experienced tablet users.

We field-tested the questionnaire with six clinical staff members, revised one of the questions, and then, with the authorization of Dr. Bremerton, uploaded the questionnaire to Qualtrics and sent an email to the clinical staff.

The questionnaire (including the responses) appears in the Appendix, page 19.

By stating that they know that their sources are a mixture of different kinds of information, not all of which is equally useful for every kind of question that needs to be answered, the writers suggest that they are careful analysts.

The writers carefully explain the logic of their methods. Do not assume that your readers will automatically understand why you did what you did. Sometimes it is best to explain your thinking. Although technical communication contains a lot of facts and figures, like other kinds of writing it relies on clear, logical arguments.

As discussed in Ch. 6, page 140, some questions will misfire. Therefore, it is smart to field-test a questionnaire before you distribute it.

Including a page number in the cross reference to the appendix is a convenience to the reader. When you do so, remember to add the correct page number after you determine where the appendix (or the several appendixes) will appear in the report.

Figure 18.8
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(continued)

Note that the writers present their references to their sources throughout the report.

Here, again, the writers explain the logic of their methods. They decided to rely on the experiences of hospital administrators. This approach will likely appeal to Dr. Bremerton.

Often you will begin your project with a cost criterion: your recommended solution must not cost more than a certain amount.

The writers present just enough information about the technologies to help the reader understand their logic. Writers sometimes present too much information; include only as much as your readers need to be able to follow your report.

Task 3: Assess the BYOD and hospital-owned tablet models

Our research revealed that hospitals use one of two administrative models for giving clinical staff access to tablets: the bring-your-own-device (BYOD) model and purchasing tablets to distribute to staff. To present the advantages and disadvantages of each of these models, we relied on reports from hospital administrators who pioneered these models (Jackson, 2011a, 2011b). For statistics on the popularity of each of these administrative models, we relied on a survey (Terry, 2011).

Task 4: Establish criteria for evaluating tablets

We both studied the voluminous literature on tablets. Jeremy Elkins met informally with his five IT colleagues to discuss the data, and Eloise Carruthers met informally with her nursing staff and with selected physicians, including several who had responded to the survey.

We began with the first criterion: cost. Dr. Bremerton had told us in our interview that the budget for the project (assuming that RPMC would supply a tablet to each of the 147 members of the clinical staff) would be \$800 per device, fully configured with any commercial software needed to operate it. For this reason, we did not conduct a thorough examination of the health-care-specific tablets, each of which costs \$2,500–3,000.

In addition, we paid particular attention to the complexities of the current tablet market, focusing on whether the various devices would work seamlessly with our health-records system and other security features ("Top Five," 2013), on the need to be able to disinfect the tablets (Carr, 2011), and on durability (Narisi, 2013). We knew from experience with all kinds of portable information technology that the question of battery life would be problematic because it can vary so much depending on load and other factors.

We concluded that two factors that might seem critically important were not: operating system and availability of relevant apps. Although the Apple iPad is the single most popular tablet, the Samsung Galaxy and other Android tablets are currently outselling iPads. As a result, all the important apps are being created for the Apple operating system (iOS), for Android, and for Windows (the OS used by the Microsoft Surface and the major health-care-specific tablets).

Figure 18.8

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(continued)

Task 5: Assess available tablets based on our criteria

Because our budget did not permit us to recommend the tablets designed for the health-care industry, we decided not to study them in detail.

To study the general-purpose tablets, we relied on trade magazines. We soon realized, however, that several of our necessary criteria — namely, the ability to disinfect the tablet, as well as durability and battery life — were not adequately addressed in the literature because our needs as a hospital are so specific.

For instance, battery life is typically reported as the mean number of hours the battery will last. But that figure varies significantly, depending on the applications the device is running. In addition, there is the question of whether the device is hot-swappable (that is, whether the battery can be replaced without shutting down the device). However, some tablets boot very quickly, making this characteristic less important. Finally, there is an administrative question: will the clinical staff member use the same tablet every day or check one out at the start of each shift (or perhaps check out a second or even a third one during a 14-hour shift)? Will fresh batteries be available only in one location, or can they be checked out at several locations? Can a staff member grab a handful of fresh batteries at the start of a shift? All these questions bear on how we would need to think about the importance of battery life.

For this reason, we recommend that a representative sample of general-purpose tablets be evaluated for disinfection, durability, and battery life and that this study include a substantial on-site evaluation period at RPMC.

Task 6: Analyze our data and prepare this recommendation report

We drafted this report and uploaded it to a wiki that we created to make it convenient for the other IT staff members and interested clinical staff members to help us revise it. We incorporated most of our colleagues' suggestions and then presented a final draft of this report on the wiki to gather any final editing suggestions.

Because analyzing their data and writing this report is part of the study, it is appropriate to include it as one of the steps. In some organizations, however, this task is assumed to be part of the study and is therefore not presented in the report.

Figure 18.8
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(continued)

Results

The writers present an advance organizer for the results section.

- In this section, we present the results of our research. For each of the tasks we carried out, we present the most important data we acquired.

Task 1: Acquire a basic understanding of tablet use by clinical staff across the nation

Since the introduction of the Apple iPad in 2010, the use of tablets by clinical staff in hospitals across the country has been growing steadily. Although there are no precise statistics on how many hospitals either distribute tablets to clinical staff or let them use their own devices in their work, the number of articles in trade magazines, exhibits at medical conferences, and discussions on discussion forums suggests that tablets are quickly becoming established in the clinical setting. And many hundreds of apps have already been written to enable users to carry out health-care-related tasks on tablets.

The most extensive set of data on tablets in hospitals relates to the use of the iPad, the first tablet on the market. Ottawa Hospital has distributed more than 1,000 iPads to clinical staff; California Hospital is piloting a program with more than 100 iPads for hospital use; Kaiser Permanente is testing the iPad for hospital and clinical workflow; and Cedars-Sinai Medical Center is testing the iPad in its hospital. The University of Chicago's Internal Medicine Residency Program uses the iPad; the iPad is also being distributed to first-year medical students at Stanford, University of California–Irvine, and University of San Francisco. In addition, there are reports of Windows-based and Android-based tablets being distributed at numerous other hospitals and medical schools (Husain, 2011).

Today, tablets have five main clinical applications (Carr, 2011):

- *Monitoring patients and collecting data.* Clinical staff connect tablets to the hospital's monitoring instruments to collect patient information and transfer it to patients' health records without significant human intervention. In addition, staff access patient information on their tablets.
- *Ordering prescriptions, authorizations, and refills.* Clinical staff use tablets to communicate instantly with the hospital pharmacy and off-site pharmacies, as well as with other departments within the hospital, such as the Imaging Department.

Figure 18.8

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(continued)

- *Scheduling appointments.* Clinical staff use tablets to schedule doctor and nurse visits and laboratory tests, to send reminders, and to handle re-scheduling and cancellations.
- *Conducting research on the fly.* Clinical staff use tablets to access medication databases and numerous reference works.
- *Educating patients.* Clinical staff use videos and animations to educate patients on their conditions and treatment options.

Tablets provide clinical staff with significant advantages. Staff do not need to go back to their offices to connect to the Internet or to the hospital's own medical-record system. Staff save time, reduce paper usage, and reduce transcription errors by not having to enter nearly as much data by hand.

Task 2: Determine the RPMC clinical staff's knowledge of and attitudes toward tablet use

On October 14, 2013, we sent all 147 clinical staff members an email linking to a four-question Qualtrix survey. In the email, we said that we were seeking opinions about tablet use by clinical-staff members who already own tablets and made clear that the survey would take less than two minutes to complete.

We received 96 responses, which represents 65 percent of the 147 staff members. We cannot be certain that all 96 respondents who indicated that they are tablet owners in fact own tablets. We also do not know whether all those staff members who own a tablet responded. However, given that some 75 percent of physicians in a 2013 poll own tablets, we suspect that the 96 respondents reasonably accurately represent the proportion of our clinical staff who own tablets (Drinkwater, 2013).

Here are the four main findings from the survey of tablet owners:

- Some 47 percent of respondents own an Apple iPad, and 47 percent own either a Samsung Galaxy or another tablet that uses the Android operating system. Only 6 percent use the Microsoft Surface, one of the several Windows-based tablets.
- Some 58 percent of the respondents strongly agree with the statement that they are expert users of their tablets. Overall, 90 percent agree more than they disagree with the statement.

The writers continue to use the task structure that they used in the methods section.

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(continued)

- Some 63 percent of respondents use their tablets for at least one clinical application. They have either loaded apps on their tablets themselves or had IT do so for them.
- Some 27 percent of the respondents would prefer to continue to use their own tablets for clinical applications, whereas 38 percent would prefer to use a tablet supplied by RPMC. Some 35 percent had no strong feelings either way. None of the respondents indicated that they would prefer not to use a tablet at all.

Task 3: Assess the BYOD and hospital-owned tablet models

Currently, hospitals use one of two models for giving clinical staff access to tablets: the bring-your-own-device (BYOD) model and the purchase model, whereby the hospital purchases tablets to distribute to staff. In this section, we will present our findings on the relative advantages of each model.

The BYOD model is based on the fact that, nationally, some three-quarters of physicians already own tablets (with the Apple iPad the single most popular model) (Drinkwater, 2013). We could find no data on how many nurses own tablets.

The main advantage of the BYOD model is that clinical staff already know and like their tablets; therefore, they are motivated to use them and less likely to need extensive training. In addition, the hardware costs are eliminated (or almost eliminated, since some hospitals choose to purchase some tablets for staff who do not own their own). Todd Richardson, CIO with Deaconess Health System, Evansville, Indiana (Jackson, 2011b), argues that staff members who own their own tablets use and maintain them carefully: they know how to charge, clean, store, and protect them. In addition, the hospital doesn't have to worry about the question of liability if staff members lose them during personal use. And if the staff member moves on to a new position at a different hospital, there is no dispute about who owns the information on the tablet. All the hospital has to do is disable the staff member's account.

However, there are three main disadvantages to the BYOD model:

- Some clinical staff do not have their own tablets, and some who do don't want to use them at work; to make the advantages of tablet use

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(continued)

available to all the clinical staff, therefore, the hospital needs to decide whether to purchase tablets and distribute them to these staff members.

- Labor costs are high because each tablet needs to be examined carefully by the hospital IT department to ensure that it contains no software that might interfere with or be incompatible with the health-care software that needs to be loaded onto it. This labor-intensive assessment by IT can seriously erode the cost savings from not having to buy the tablet itself.
- Chances of loss increase because the staff member is more likely to use the tablet at home as well as in the hospital.

The other model for making tablets available to clinical staff is for the hospital to purchase the same tablet for each staff member.

The purchase model offers two distinct advantages, as described by Dale Potter, CIO of 1,300-bed Ottawa Hospital in Ontario, Canada. Potter has purchased more than 2,000 iPads for his staff (Jackson, 2011a):

- The hospital controls the software and apps loaded on the tablets and can even create its own apps. For instance, Potter hired 120 developers to create apps.
- The hospital reduces labor costs because IT can load exactly the same set of apps and other software on each machine. Updates and upgrades also are far simpler to manage when all the devices are the same.

The main disadvantages of the purchase model are the following:

- Staff members might not like the tablet that the hospital chooses.
- Staff members might need to be trained to use the tablet.
- Liability issues related to loss of the tablets must be addressed officially in the employment contract between the hospital and the staff member.

Beginning in 2010 with the introduction of the iPad, most hospitals used the BYOD model; clinical staff brought their own tablets to work and started to think about ways to use them in a clinical setting. As time passed, however, and more people began to acquire tablets from different manufacturers, hospitals began to see the advantages of standardizing tablet use. A 2011 survey (Terry, 2011) showed that 40 percent of hospitals use the BYOD model, whereas 55 percent of hospitals support only devices provided or owned by the institution.

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(continued)

Task 4: Establish criteria for evaluating tablets

Our interview with Dr. Bremerton, as well as our research in the available literature, yielded four *necessary* criteria and two *desirable* criteria for tablet use at RRMCC.

A tablet that does not meet a necessary criterion would be eliminated from consideration. The four necessary criteria are the following:

- **Cost.** Each device must cost less than \$800, fully configured for use.
- **HIPAA compliance.** We cannot use any device or technology that would jeopardize our compliance with the HIPAA and Affordable Care Act privacy standards for medical information. What this means, in essence, is that a tablet must operate seamlessly with our electronic health-records system, Cerner, which we access through our current utility, Citrix. The tablet must duplicate our current desktop and remote-access capabilities.
- **Other security features.** The tablet must support basic security features, including encryption, remote wipe (IT's ability to remove data on a lost tablet), auto-lock (that cannot be turned off except by IT), and perimeter settings (IT's ability to prevent use of a tablet that has strayed a certain distance from the server) ("Top Five," 2013).
- **Ease of disinfection.** Because the tablets would be used in a clinical setting, they would be subject to the same standards of disinfection as any other equipment or device. A tablet that cannot be disinfected effectively and easily would not be an appropriate choice (Carr, 2011).

In addition, we have established two other criteria against which to evaluate tablets. We have deemed these criteria desirable; a tablet that does not meet a desirable criterion would not be eliminated from consideration.

- **Durability.** Because the tablet would be carried around within the hospital and sometimes would be used in close quarters, it likely would be dropped or bumped. The more durable, the more desirable the tablet would be.
- **Long battery life.** Our clinical staff routinely work shifts as long as 14 hours. The longer the battery life, the better. Related to battery life is the hot-swap feature. In a hot-swappable device, the battery can be removed and replaced with a fresh one without having to shut down the tablet.

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(continued)

Task 5: Assess available tablets based on our criteria

One challenge we faced is that it was impractical to do a comprehensive assessment of all of the approximately 100 tablets available on the market. A second challenge is that tablets fall into a dizzying variety of sometimes overlapping categories. For example, the single most popular tablet is the Apple iPad, which runs on Apple's proprietary operating system. Many other tablets run on the Android system. Some, like the Amazon Kindle Fire, run on specialized configurations of Android. And Microsoft's Surface runs on Windows. There are general-purpose tablets, like the Samsung, made for the consumer market, and there are specialized tablets, like the Motion, designed for the health-care industry (Phillips, 2013). There are rugged tablets designed to meet military specifications for durability. Some tablets have USB ports for easy connection to existing clinical instruments and devices, as well as specialized features such as barcode-reading and RFID capabilities. Some tablets come with dozens of native (pre-installed) apps related to health care.

In short, although many brands of tablet are similar, no two are identical. As a result, we decided to review a small set of tablets that are mentioned frequently in health-care magazines and journals. We were sure to include the iPad, the Microsoft Surface, and several Android tablets. We also looked briefly at several tablets specially designed and marketed for health-care applications.

We present our basic findings by returning to our set of necessary and desired criteria.

The four necessary criteria are the following:

- **Cost.** Unfortunately, our cost criterion of \$800 per unit eliminates all the tablets designed for health-care applications. These tablets, which cost between \$2,500 and \$3,000, are easy to disinfect and highly durable and include many desirable features such as barcode scanners, RFID readers, speech, and smart-card readers. The leading tablets in this category are the ProScribe Medical Tablet PC, the Sahara Slate PC, the MediSlate MCA, the Motion C5v Medical Tablet PC, the Teguvar TA-10 Medical Tablet PC, the Advantech Medical PC, and the Arbor Antibacterial Medical Tablet.
- **HIPAA compliance.** All of the tablets we reviewed would enable us to remain in compliance with HIPAA and ACA, and all would enable us to use our current record system, Cerner, through our Citrix utility. Some of the tablets have native apps to support this access, whereas others use virtual private networks.

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(continued)

- *Other security features.* All of the tablets we reviewed would support the basic security features we identified, although some tablets would be easier than others for IT to configure.
- *Ease of disinfection.* This proved to be a very challenging criterion to assess. On the one hand, all of the so-called ruggedized tablets, as well as all those designed for health care, met this criterion because all the surfaces are sealed. On the other hand, the general-purpose tablets were not designed to withstand medical-grade disinfectants. However, this does not necessarily mean that they would not withstand clinical disinfection. According to John Curin, head of the health-care practice at Burwood, an IT consulting firm, "I couldn't disinfect [an iPad] if I wanted to." By contrast, Dr. John Halamka, the CIO of Beth Israel Deaconess Medical Center in Boston, argues that the iPad is "completely disinfectable." Even though Apple advises against using a disinfecting solution on the iPad, Halamka says he does so and has experienced no problems (Carr, 2011).

On the basis of the cost criterion, we must eliminate all the health-care-specific tablets and study only the general-purpose tablets. We need to devise a method to determine whether any of the general-purpose tablets can be adequately disinfected. For the purposes of this study, however, we decided to assess a representative subset of the general-purpose tablets based on our desirable criteria.

We will now present our major findings regarding the desirable criteria: durability and long battery life. We have decided against presenting a decision matrix because some of the technical characteristics are either imprecise or unknowable. For instance, battery life is a notoriously difficult characteristic to measure, because it can be affected greatly by so many factors.

Our tentative findings are that the Apple iPad, the Samsung Galaxy and the many other Android tablets, and the Microsoft Surface *appear* to meet our two desirable criteria. We would need to carry out our own tests of these tablets, configured with our software and appropriate apps, to determine their battery life. And we would need to determine whether any of the aftermarket protective cases would provide adequate durability. Rugged and waterproof iPad cases are available from Hard Candy Cases, OtterBod, and others. There are also waterproof solutions that are said to sterilize the iPad. In addition, there are some protective cases said to be designed specifically for clinical environments.

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(continued)

Conclusions

In this section, we present our conclusions based on our research related to the four questions we were asked to answer.

Tablet use by clinical staff

On the basis of our research, we conclude that increasing numbers of our clinical staff will begin to use tablets for more applications in a clinical setting. This increase will spur the creation of more health-care apps for all tablets.

The RRMC clinical staff's knowledge of and attitudes toward tablet use

On the basis of our survey of clinical staff who already own tablets, we conclude that they consider themselves proficient in using the tablets, and most already use them for at least one clinical application. Because they prefer the hospital-supplied model for tablet use, we conclude that they would welcome a formal plan to supply tablets.

The BYOD and hospital-owned tablet models

We conclude that the hospital-owned tablet model offers more advantages and fewer disadvantages than the BYOD model. Having all clinical staff use the same model of tablet saves money by streamlining the process of loading software and installing updates and upgrades. The medical center IT department can even create hospital-specific apps.

Criteria for evaluating tablets

Our first necessary criterion, cost, eliminated all the health-care-specific tablets from consideration, leaving us with only the general-purpose tablets. All the general-purpose tablets we evaluated met our HIPAA and ACA compliance and other security criteria. Unfortunately, because the general-purpose tablets are not designed for clinical settings, we could not determine from our research whether any of them are easy to disinfect. We would need to conduct our own tests to answer that question.

We would need to conduct our own testing to determine whether battery life and durability of any of the general-purpose tablets are acceptable.

The function of a conclusion is to explain what the data mean. Here the writers explain how their results can help their readers determine how to proceed with the tablet study. Notice that a conclusion is not the same as a recommendation (which explains what writers think should be done next).

The writers present an advance organizer for the conclusions section.

At this point in the report, the writers have decided to abandon the "task" labels. Their thinking is that they are focusing less on what they did and more on the meaning of the information they gathered. However, they retain the headings that help readers understand the topic they are discussing.

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(continued)

Assessing available tablets based on our criteria

We drew two main conclusions from our study of available tablets:

- The best tablets for our use — the ones designed and intended for health-care settings — are out of our price range. Because they meet all our criteria, we should reassess whether our budget will permit us to assess them more carefully.
- Any one of the available general-purpose tablets is potentially acceptable (provided it meets the disinfection criterion). We see no compelling reason to favor one operating system over another. Apple iPads, Android tablets, and Windows tablets all come with acceptable power, and there are plenty of health-care apps available for each type. As Android machines establish their dominance over the iPad, health-care apps for Android devices will surpass those for the iPad in variety and number.

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(continued)

Recommendation

We recommend that the RRM administration pursue one of two options:

Option 1: Reconsider the cost criterion

Although a health-care-specific tablet, at \$2,500–3,000, is some three times the cost of a general-purpose tablet, it offers distinct advantages in terms of disinfection properties, ruggedness, and availability of specialized hardware and software for better integration with our other devices and equipment.

If it is not possible to provide health-care-specific tablets to all clinical staff, we might consider a two-tiered system (some staff members receive a health-care-specific tablet, others a general-purpose one) or a phased-implementation system.

Option 2: Test a representative sample of general-purpose tablets

If RRM wishes to continue to assess the general-purpose tablets, we recommend that we contact manufacturers of the Apple iPad, the Samsung Galaxy, the Microsoft Surface, and several other Android tablets. We could request that they supply their most powerful products, equipped with the best set of medical apps, for our internal testing and evaluation.

We would then have IT test each tablet in a controlled environment for such technical characteristics as battery life and durability. We would also test each tablet for disinfection. Next, we would invite the manufacturers' representatives to attend a one- or two-day tablet fair, where we would make the products available to our clinical staff to try and offer hands-on assessment. On the basis of these tests and follow-up questionnaires submitted by clinical staff, we would be in a good position to know how to proceed.

This recommendation states explicitly what the writers think the reader should do next. Note that they are sketching in ideas that they have not discussed in detail but that might interest their readers.

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(continued)

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This list of references is written according to the APA documentation style, which is discussed in Appendix, Part B, page 622.

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Figure 18.8

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Appendix: Clinical-Staff Questionnaire

This is the questionnaire we distributed to the 147 RRMc clinical staff members. We received 96 responses. The numbers in boldface below represent the percentage of respondents who chose each response.

Questionnaire on Tablet Use at RRMc

Directions: As you may know, Dr. Bremerton is conducting a study to determine whether to institute a formal policy on tablet use by clinical staff.

If you own a tablet device, please respond to the following four questions. Your opinions can help us decide whether and how to develop a policy for tablet use at RRMc. We greatly appreciate your answering the following four questions.

1. Which brand of tablet do you own?

- 47%** Apple iPad
- 28%** Samsung Galaxy
- 9%** Amazon Kindle Fire
- 6%** Microsoft Surface
- 10%** Other (please name the brand) (**Respondents named the Asus, Google Nexus, and a Toshiba model.**)

2. "I consider myself an expert user of my tablet."

Strongly disagree **8%** **2%** **13%** **19%** **58%** Strongly agree

3. Do you currently use your tablet for a clinical application, such as monitoring patients or ordering procedures?

- 63%** Yes
- 37%** No

4. If RRMc were to adopt a policy of using tablets for clinical applications (and to supply the appropriate software and training), which response best describes your attitude?

- 27%** I would prefer to use my own tablet.
- 38%** I would prefer to use a hospital-supplied tablet.
- 35%** I don't have strong feelings either way about using my own or a hospital-supplied tablet.
- 0%** I would prefer not to use any tablet at all for clinical applications.

Thank you!

Presenting the percentage data in boldface after each question is a clear way to communicate how the respondents replied. Although most readers will not be interested in the raw data, some will.

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(continued)

FIGURE 18.8 Sample Recommendation Report

WRITER'S CHECKLIST

In planning your recommendation report, did you

- ☐ consider feasibility? ([p. 471](#))
- ☐ identify the questions that need to be answered (considering the problem or the opportunity)? ([p. 472](#))
- ☐ analyze your audience? ([p. 473](#))
- ☐ determine your purpose? ([p. 473](#))
- ☐ establish criteria for the solution? ([p. 473](#))
- ☐ carry out necessary research to determine the options and study them? ([p. 474](#))
- ☐ draw valid conclusions about the results (if appropriate)? ([p. 476](#))
- ☐ formulate recommendations based on the conclusions (if appropriate)? ([p. 477](#))

Does the introduction

- ☐ explain the subject of the report? ([p. 479](#))
- ☐ explain the purpose of the report? ([p. 479](#))
- ☐ explain the background of the report? ([p. 479](#))
- ☐ describe your sources of information? ([p. 479](#))
- ☐ indicate the scope of the report? ([p. 479](#))
- ☐ briefly summarize the most significant findings of the project? ([p. 479](#))
- ☐ briefly summarize your recommendations? ([p. 479](#))
- ☐ explain the organization of the report? ([p. 479](#))
- ☐ define key terms used in the report? ([p. 479](#))

Does the methods section

- ☐ describe your methods in sufficient detail? ([p. 479](#))
- ☐ justify your methods where necessary, explaining, for instance, why you chose one method over another? ([p. 479](#))

Are the results presented

- ☐ clearly? ([p. 479](#))
- ☐ objectively? ([p. 479](#))
- ☐ without interpretation? ([p. 479](#))

Are the conclusions

- ☐ presented clearly? ([p. 480](#))
- ☐ drawn logically from the results? ([p. 480](#))

Are the recommendations

- ☐ clear? ([p. 480](#))
- ☐ specific? ([p. 480](#))
- ☐ stated politely? ([p. 480](#))
- ☐ in an appropriate form (list or paragraph)? ([p. 480](#))
- ☐ in an appropriate location? ([p. 480](#))

Does the transmittal letter

- ☐ clearly state the title and, if necessary, the subject and purpose of the report? ([p. 481](#))
- ☐ clearly state who authorized or commissioned the report? ([p. 481](#))
- ☐ acknowledge any assistance you received? ([p. 481](#))
- ☐ establish a courteous and professional tone? ([p. 481](#))

Does the cover include

- ☐ the title of the report? ([p. 481](#))
- ☐ your name and position? ([p. 481](#))
- ☐ the date of submission? ([p. 481](#))
- ☐ the company name or logo? ([p. 481](#))

Does the title page

- ☐ include a title that clearly states the subject and purpose of the report? ([p. 481](#))
- ☐ list your name and position and those of your principal reader(s)? ([p. 481](#))
- ☐ include the date of submission of the report and any other identifying information? ([p. 481](#))

Does the abstract

- ☐ list the report title, your name, and any other identifying information? ([p. 481](#))
- ☐ clearly define the problem or opportunity that led to the project? ([p. 482](#))
- ☐ briefly describe (if appropriate) the research methods? ([p. 482](#))
- ☐ summarize the major results, conclusions, and recommendations? ([p. 482](#))

Does the table of contents

- ☐ contain a sufficiently detailed breakdown of the major sections of the body of the report? ([p. 482](#))
- ☐ reproduce the headings as they appear in your report? ([p. 482](#))
- ☐ include page numbers or hyperlinks? ([p. 483](#))
- ☐ Does the list of illustrations (or list of tables or list of figures) include all the graphics found in the body of the report? ([p. 483](#))

Does the executive summary

- ☐ clearly state the problem or opportunity that led to the project? ([p. 485](#))
- ☐ explain the major results, conclusions, recommendations, and managerial implications of your report? ([p. 485](#))
- ☐ avoid technical vocabulary and concepts that a managerial audience is not likely to be interested in? ([p. 485](#))
- ☐ Does the glossary include definitions of all the technical terms your readers might not know? ([p. 486](#))
- ☐ Does the list of symbols include all the symbols and abbreviations your readers might not know? ([p. 488](#))
- ☐ Does the list of references include all your sources and adhere to an appropriate documentation system? ([p. 488](#))
- ☐ Do the appendixes include supporting materials that are too bulky to present in the report body or that are of interest to only a small number of your readers? ([p. 489](#))

EXERCISES

For more about memos, see Ch. 14, [p. 376](#).

1. An important element in carrying out a feasibility study is determining the criteria by which to judge each option. For each of the following topics, list five necessary criteria and five desirable criteria you might apply in assessing the options.
 - a. buying a smartphone
 - b. selecting a major
 - c. choosing a company to work for
 - d. buying a car
 - e. choosing a place to live while you attend college
2. Go to www.usa.gov and select the “Government Agencies” tab. Choose an agency and navigate to its website. Then find a recommendation report on a subject that interests you. In what ways does the structure of the report differ from the structure described in this chapter? In other words, does the report lack some of the elements described in this chapter, or does it have additional elements? Are the elements arranged in the order in which they are described in this chapter? In what ways do the differences reflect the audience, purpose, and subject of the report?
3. **TEAM EXERCISE** Write the recommendation report for the research project you proposed in response to [Exercise 3 on page 446 in Chapter 16](#). Your instructor will tell you whether the report is to be written individually or collaboratively, but either way, work closely with a partner to review and revise your report. A partner can be very helpful during the planning phase, too, as you choose a topic, refine it, and plan your research.
4. Secure a recommendation report for a project subsidized by a city or federal agency, a private organization, or a university committee or task force. (Be sure to check your university’s website; universities routinely publish strategic planning reports and other sorts of self-study reports. Also check www.nas.edu, which is the site for the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the National Research Council, all of which publish reports on the web.) In a memo to your instructor, analyze the report. Overall, how effective is the report? How could the writers have improved the report? If possible, submit a copy of the report along with your memo.

e CASE 18: Analyzing Decision Matrices

As president of a music-instruction company, you are exploring the possibility of purchasing an electric guitar that can be used for digital recording. You ask your director of guitar instruction to investigate options for you, but you find some problems with her methodology. To get started helping her research the matter more successfully and provide helpful recommendations, go to LaunchPad.

Table 1: Electric Guitar Selection Criteria (Markel/Selber)

Criteria	Weight	Brand A	Brand B	Brand C	Brand D
Sound Quality	30%	85	90	75	80
Build Quality	25%	70	85	90	75
Price	20%	90	80	85	95
Portability	15%	80	75	85	80
Customer Support	10%	75	80	85	70
Total Score		78	82	85	78

Table 2: Electric Guitar Selection Criteria (Bedford/St. Martin's)

Criteria	Weight	Brand A	Brand B	Brand C	Brand D
Sound Quality	30%	85	90	75	80
Build Quality	25%	70	85	90	75
Price	20%	90	80	85	95
Portability	15%	80	75	85	80
Customer Support	10%	75	80	85	70
Total Score		78	82	85	78

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